

AMENDMENTS TO THE SPECIFICATION

Abstract of the Disclosure

A6 An dosimetry method exposes improvement to existing thermoluminescence devices comprising a sensitive element comprising one or more than one thermoluminescence crystals to radiation without using conventional filters, and reads the energy stored in the crystals by converting the energy to light in a conventional manner, and then filtering each crystal output in a different portion of the spectrum generated by the crystals, the improvement comprising a lens drawer comprising one more bandpass filters. Also a corresponding lens drawer and thermoluminescence dosimetry method.

Page 1, last paragraph is amended as indicated:

A1 Current dosimetry methods employ TLDs that have materials such as copper, Mylar®, tin, and/or plastics ~~placed over them~~ to filter the radiation energy. See, e.g., M. Moscovitch, et al., "Mixed Field Personnel Dosimetry Using a Nearly Tissue-Equivalent Multi-Element Thermoluminescence Dosemeter", *Radiation Protection Dosimetry* 34:1/4, pp. 145-148 (1990); and T.F.L. Daltro, et al., "Thermoluminescence Dosemeter for Equivalent Dose Assessment in Mixed Beta and Gamma Field", *Radiation Protection Dosimetry* 85:1-4, pp. 145-148 (1999). This radiation filtration causes varying degrees of energy to be absorbed by the TLD material underneath the filter(s). These dosimeters are processed using machines such as the Model 8800PC reader manufactured by Bicron/NE of Solon, Ohio. K.J. Velbeck, et al., "Next Generation Model 8800 Automatic TLD Reader", *Radiation Protection Dosimetry* 84:1-4, pp. 381-386 (1999). Dose calculation algorithms attempt to determine radiation type and energy based solely on the ratios of light output without regard to the light wavelength. See, e.g., E.W. Bradley, et al., "Harshaw Dose Calculation Algorithm", Sandia National Laboratories Report (1994); Daltro, et al., *supra*; and Moscovitch, et al., *supra*. Additionally, the use of radiation filters creates an angular dependence problem that results in an underestimation of the dose equivalent when a worker is not directly facing the radiation source. L.F. Friedman, et al., "Angular Dependence of the Harshaw 8800/8812 TLD System", Sandia National Laboratories Report (1991).

Page 6, first paragraph is amended as indicated:

A2
 Fig. 1 illustrates in top view the preferred embodiment of the improved lens drawer 10 of the invention which is incorporated into prior art TLDs. In the prior art, the lens drawer comprises one or more (such as four) ~~of~~ clear lenses that pass all light wavelengths but provide physical protection of the photomultiplier tubes of the TLD reader from environmental degradation, such as from deposits of foreign matter previously deposited on the TLD. In the invention, the lens drawer comprises one or more (such as four) bandpass filters 12 (preferably lenses) that each allow only predetermined wavelengths to pass ~~to~~ from the TLD crystal beneath. Each bandpass filter filters a wavelength range that may or may not overlap that of the other bandpass filters. The range width of each bandpass filter can be between, for example, approximately 25nm and 100nm.

Page 6, 2nd paragraph, is amended as indicated:

A3
 Fig. 2 illustrates the sensitive element 16 of a TLD (prior art), comprising one or more TLD crystals 14 (typically encapsulated in Teflon®) which correspond in number to the number of lenses in the lens drawer, identification barcode 18, and aluminum card 20. The present invention does not alter the design of the sensitive element of the TLD, although thicknesses, materials, and doping of the TLD crystals can be altered to take advantage of the wavelength filtration provided by the improved lens drawer of the invention.